

What is claimed is:

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1. A polypeptide having cellobiohydrolase I activity, selected from the group consisting of
  - a) *H. grisea* CBH1.1 variant derived from CBS 225.63;
  - b) *H. grisea* CBH1.1 variant having the sequence given in Figure 3 (SEQ ID NO:3);
  - c) *Hypocrea jecorina* CBH1 variant comprising at least one substitution selected from the group consisting of T55, S58, Q101, N250, P265 and L288 of the mature sequence; and
  - d) *Scytalidium thermophilum* CBH1 (SEQ ID NO:11) derived from CBS 671.88.
2. The polypeptide of Claim 1 wherein the *Hypocrea jecorina* CBH1 variant comprises a substitution at a position corresponding to one or more of T55E, T55K, S58T, Q101Y, Q101H, N250D, N250E, P265A, P265S and L288I.
3. The polypeptide of Claim 1 further comprising a signal sequence. ,
4. The polypeptide of Claim 3 comprising an *H. grisea* CBH1.1 variant having the sequence given in Figure 4 (SEQ ID NO:4).
5. The polypeptide of Claim 3 comprising a *Scytalidium thermophilum* CBH1 (SEQ ID NO:9).
6. A polynucleotide encoding a cellobiohydrolase selected from the group consisting of
  - a) *H. grisea* CBH1.1 variant derived from CBS 225.63;
  - b) *Hypocrea jecorina* CBH1 variant comprising at least one substitution selected from the group consisting of T55, S58, Q101, N250, P265 and L288 of the mature sequence; and
  - c) *Scytalidium thermophilum* CBH1 derived from CBS 671.88.
7. A polynucleotide according to Claim 6, wherein the cellobiohydrolase is an *H. grisea* CBH1.1 variant is derived from CBS 225.63.

8. A polynucleotide according to Claim 6, wherein the *H. grisea* CBH1.1 variant comprises SEQ ID NO:3.
9. A polynucleotide according to Claim 6, wherein the *H. grisea* CBH1.1 variant comprises SEQ ID NO:4.
10. A polynucleotide according to Claim 6, wherein the cellobiohydrolase is a *S. thermophilum* CBH1 comprising SEQ ID NO:9.
11. A polynucleotide according to Claim 6, wherein the cellobiohydrolase is a *S. thermophilum* CBH1 comprising SEQ ID NO:11.
12. A polynucleotide according to Claim 6, wherein the cellobiohydrolase is a *H. jecorina* CBH1 variant comprises a substitution at a position corresponding to one or more of T55E, T55K, S58T, Q101Y, Q101H, N250D, N250E, P265A, P265S and L288I of SEQ ID NO:10.
13. A nucleic acid construct comprising a nucleotide sequence according to claim 6, operably linked to one or more control sequences.
14. A recombinant expression vector comprising the nucleic acid construct of Claim 13.
15. A recombinant host cell comprising the nucleic acid construct of Claim 14.
16. A method for producing a CBH1 polypeptide, said method comprising:
  - a) transforming a host cell with a nucleic acid comprising a polynucleotide according to Claim 6;
  - b) culturing the host cell under conditions to produce the polypeptide; and
  - c) recovering the polypeptide.
17. A composition comprising a polypeptide having cellobiohydrolase I activity according to claim 1.
18. A method of converting biomass to sugars comprising contacting the biomass with a polypeptide having cellobiohydrolase I activity wherein said polypeptide has enhanced

activity relative to *T. reesei* in either a PCS conversion assay 65°C or a PASC assay at 38°C.

19. A method of converting biomass to sugars comprising contacting said biomass with a polypeptide having cellobiohydrolase I activity according to claim 1.